IN THE SPECIFICATION:

Please replace the first full paragraph of specification page 2 with the following replacement paragraph:

U.S. patent no. 6,118,379 (‘379) to Kudukula et al and U.S. patent no. 6,285,342 B1 (‘342) to Brady et al. are two ~~patent is~~patents in this field.

Please replace the second full paragraph of specification page 2 with the following replacement paragraph:

The ‘379 patent uses a partial spiral (one arm) with a spaced ground plane and claims maximum range in its abstract. A carrier frequency of 2.45 GHz is discussed but the range appears to be in the range of inches. Moreover, the partial spiral limits bandwidth, which is desired in this patent, and the spaced ground plane adds cost. The ‘342 patent uses a distorted spiral to gain a larger antenna in a button sized package and also uses a loading bar and stubs to match impedances, but adds complexity and cost, but does not appear to extend the useable range beyond the above mentioned thirty inches.

Please replace the forth full paragraph of specification page 3 with the following replacement paragraph:

In a preferred embodiment, there is an impedance matching network that is packaged on the same substrate as the planar spiral antenna. An input circuit is ~~preferable~~ preferably provided on a separate substrate that is joined to the antenna bearing substrate forming a sandwich package that maintains the tag form factor. Rectifying Schottky diodes form part of the input circuit to form a DC signal. The input circuit, in a preferred embodiment, may ~~includes~~ include a capacitor built into the die as is known in the art

(say a reversed biased diode) to store charge from the DC signal when the RF signal is strong. The charge on such a capacitor can be used so that the tag circuit will respond when the input RF signal is lower.

Please replace the first full paragraph of specification page 4 with the following replacement paragraph:

The invention description below refers to the accompanying drawings, of which:

FIG. 1 is a system block diagram of an RFID tag system;

FIG. 2 is a frequency chart of a preferred embodiment for a transponder suitable for being read in Europe and in the U.S.;

FIG. 3 is a graph of one leg of a preferred spiral antenna;

FIG. 4 is a circuit diagram of the impedance matching network of a passive transponder;

FIG. 5 are the calculations for a preferred embodiment; and

FIGS. 6A and 6B are illustrations of a full spiral antenna, matching network and input circuitry built in accordance with the present invention.

Please replace the second full paragraph of specification page 4 with the following replacement paragraph:

FIG. 1 is a basic block diagram of an illustrative RFID tag system. Here an interrogation station 100 generates an RF signal 108, usually a pulse signal generated by the logic circuit 104, that is transmitted 110 via an antenna 112 to a tag system 102. The RF pulse is received via an antenna 114 and an RF impedance matching circuit 116 as is known in the art, and, an input circuit 118. If the RF signal is strong enough, the input circuitry rectifies the RF signal and charges a capacitor that is used to power the tag system when the RF signal is low. As is known in the art, the tag circuit presents a load to the RF transmitter causing the RF transmitter power to increase in the presence of a tag. In one embodiment , as known in the art, the driving RF voltage signal is stepped up.

That increase may be sensed by the logic circuitry 104 to indicate the presence of the tag. Other known techniques may used to generate and detect a tag.

Please replace the third full paragraph of specification page 5 with the following replacement paragraph:

FIG. 3 shows one arm of a spiral antenna with the outer spiral radius r1 200 created in accordance with $r1 = r0e^{a\theta}$ and the inner spiral radius r2 202 created on accordance with $r2 = r0e^{\theta-\theta 0}$. Here r0 ~~represent~~ represents an initial position, θ angular position, θ0 the angular offset between r1 and r2, and "a" growth rate.

Please replace the forth full paragraph of specification page 5 with the following replacement paragraph:

A second arm (shown in FIG. 6) can be created by rotating the one arm by 180 degrees in the plane of the one arm. A small gap is left between the two spiral arms at their starting points. Impedance matching circuitry of FIG. 4 is applied to this gap. To achieve frequency independence, of the antenna the widths of the arms are made equal to the spacing between the arms as the arms radiate and grow outward.

Please replace the first full paragraph of specification page 6 with the following replacement paragraph:

FIG. 5 shows the applicable calculations for a specific preferred embodiment of the RFID tag system operating at 915 MHz.

Please replace the third full paragraph of specification page 6 with the following replacement paragraph:

In the preferred embodiment illustrated ~~of~~ in FIG. 6A, the linear dimensions of the spiral antenna itself is less than about 2.3 inches wide 508 by less than about 0.8 inches high 510.